

Claims

1. A surgical instrument, comprising:

a handle portion operably configured to produce an articulation motion and a firing motion;

5 a shaft having a longitudinal axis attached to the handle portion for transferring the articulation motion and the firing motion;

an articulation mechanism coupling the shaft to the end effector and responsive to the articulation motion to rotate the end effector from the longitudinal axis of the shaft;

an end effector distally attached to the articulation mechanism;

10 a firing mechanism responsive to the firing motion and coupled for movement through the articulation mechanism and end effector in response to the firing motion; and

a pair of support plates flanking the firing mechanism across the articulation mechanism, each support plate including an end springedly engaged to a frame recess formed in the articulation mechanism.

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2. The surgical instrument of claim 1, further comprising a spring longitudinally coupled with a selected side of the frame recess and the end of the support plate.

3. The surgical instrument of claim 2, wherein the other end of each support plate is engaged within an end frame recess and biased by a spring.

4. The surgical instrument of claim 2, wherein the spring comprises a spring finger formed at the end of the support plate.

5. The surgical instrument of the claim 4, wherein the spring finger is oriented distally toward one side of the frame recess, the support plate including another spring finger oriented proximally toward the other side of the frame recess.

6. The surgical instrument of claim 1, further comprising a resilient member engaged in the frame recess and coupled to the end of the support plate.

7. The surgical instrument of claim 6, wherein the other end of each support plate is engaged in an end frame recess and supported by another resilient member engaged therein.
8. The surgical instrument of claim 1, wherein each support plate comprises a resilient material responsive to the articulation motion to change longitudinal length.

9. A surgical instrument comprising:
- a handle portion operable to produce a firing motion, a closing motion, and an articulation motion;
- a shaft coupled to the handle portion operable to separately transfer the firing motion,
- the closing motion, and the articulation motion;
- an elongate channel coupled to the shaft;
- an anvil pivotally coupled to the elongate channel, responsive to the closing motion from the shaft;
- a firing device including a distally presented cutting edge longitudinally received between the elongate channel and the anvil;
- an articulation mechanism pivoting the elongate channel from the shaft in response to the articulation motion; and
- a pair of support plates flanking the firing mechanism across the articulation mechanism, each support plate including an end springedly engaged to a frame recess formed in the articulation mechanism.
10. The surgical instrument of claim 9, wherein the firing device engages the anvil and elongate channel to affirmatively space the anvil from the elongate channel during longitudinal travel between the anvil and elongate channel.
11. The surgical instrument of claim 9, wherein the firing device further comprises a distally presented cutting edge, the surgical instrument further comprising a staple cartridge engaged by the elongate channel and including a proximally opened slot for receiving the cutting edge of the firing device, the staple cartridge including a plurality of staples cammed upwardly by the distal longitudinal movement of the firing device.
12. The surgical instrument of claim 9, further comprising a spring longitudinally coupled with a selected side of the frame recess and the end of the support plate.
13. The surgical instrument of claim 9, wherein the other end of each support plate is engaged within an end frame recess and biased by a spring.

14. The surgical instrument of claim 9, wherein the spring comprises a spring finger formed at the end of the support plate.
15. The surgical instrument of the claim 14, wherein the spring finger is oriented distally toward one side of the frame recess, the support plate including another spring finger oriented proximally toward the other side of the frame recess.
16. The surgical instrument of claim 9, further comprising a resilient member engaged in the frame recess and coupled to the end of the support plate.
17. The surgical instrument of claim 16, wherein the other end of each support plate is engaged in an end frame recess and supported by another resilient member engaged therein.
18. The surgical instrument of claim 9, wherein each support plate comprises a resilient material responsive to the articulation motion to change longitudinal length.

19. A surgical instrument, comprising:
  - a handle portion operably configured to produce a rotational articulation motion and a longitudinal firing motion;
  - a shaft operably configured to separately transfer the rotational articulation motion and the longitudinal firing motion;
  - 5 an end effector distally coupled to the shaft means;
  - an articulation mechanism responsive to the rotational articulation motion to articulate the end effector;
  - a firing bar responsive to the longitudinal firing motion of the handle portion, the
  - 10 firing bar comprising:
    - an elongate strip longitudinally positioned for movement through the articulation mechanism, and
    - a firing bar head distally connected to the elongate strip and positioned for longitudinal movement in the end effector;
  - 15 a support plate means for providing articulating support flanking the firing bar elongate strip through the articulation means.
20. The surgical instrument of claim 11, wherein the handle portion comprises a handle means for producing a rotational articulation motion and a longitudinal firing motion, and the shaft comprises a shaft means for separately transferring the rotational articulation motion and the longitudinal firing motion.
21. The surgical instrument of claim 12, wherein the handle means further comprises a means for producing a longitudinal closing motion, and the shaft means further comprises a means for separately transferring the longitudinal closing motion.